AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in this application:

1-96. (Canceled)

97. (Currently amended) A method for decreasing neuronal cell death associated with a neuropathy, wherein said neuropathy is characterized by altered N-CAM or L1 isoform expression, comprising

administering to a subject afflicted with said [[a]] neuropathy ~~associated with reduced N-CAM or L1 isoform activities~~ a morphogen comprising a dimeric protein, the dimeric protein having one or more of the following:

(1) a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5;

(2) a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5;

(3) a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5; or

(4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6;

wherein the morphogen (i) stimulates the production of said [[an]] N-CAM or L1 isoform in said neuronal cell, and (ii) decreases neuronal cell death associated with said [[a]] neuropathy.

98. (Canceled)

99. (Currently amended) A method for decreasing neuronal cell death associated with a chemical or physical injury, wherein said chemical or physical injury is characterized by altered N-CAM or L1 isoform expression, comprising:

(a) administering to a subject having a neuron afflicted with a physical injury or who was exposed to a toxin that inhibits the proliferation and migration of neurons and interferes with cell adhesion, which exposure causes chemical injury; or

(b) prophylactically administering to a subject just prior to, or concomitant with, surgery that causes physical injury to a neuron,

a morphogen comprising a dimeric protein with:

(1) a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5;

(2) a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5;

(3) a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5; or

(4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6;

wherein the chemical injury is caused by lead, ethanol, ammonia, organic solvents, formaldehyde, cigarette smoke, opiates, or glutamate, and wherein the morphogen (i) stimulates the production of said [[an]] N-CAM or L1 isoform in said neuronal cell, and (ii) decreases neuronal cell death associated with said [[the]] chemical or physical injury.

100-104. (Canceled)

105. (Currently amended) The method of any of claims 97 and[[,]] 99~~, 112 and 113~~, wherein the morphogen is human OP-1.

106. (Currently amended) The method of any of claims 97 and[[,]] 99~~, 112 and 113~~, wherein the morphogen is mouse OP-1.

107. (Currently amended) The method of any of claims 97 and[[,]] 99~~, 112 and 113~~, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, BMP2A, BMP2B, Vg1, Vgr-1, BMP5, or BMP6.

108. (Currently amended) The method of any of claims 97 and[[,]] 99~~, 112 and 113~~, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, BMP5, or BMP6.

109. (Currently amended) The method of any of claims 97 and[[,]] 99~~, 112 and 113~~, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5.

110. (Currently amended) The method of any of claims 97 and[[,]] 99~~, 112 and 113~~, wherein the morphogen is a dimeric protein having a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5.

111. (Currently amended) The method of any of claims 97 and[[,]] 99~~, 112 and 113~~, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5.

112. (Currently amended) A method for decreasing neuronal cell death associated with a neuropathy, wherein said neuropathy is characterized by altered N-CAM or L1 isoform expression, comprising

contacting a neuronal cell damaged by said [[a]] neuropathy ~~associated with reduced N-CAM or L1 isoform activities~~ with a morphogen comprising a dimeric protein, the dimeric protein having one or more of the following:

(1) a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5;

(2) a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5;

(3) a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5; or

(4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6; and

wherein the morphogen (i) stimulates the production of said [[an]] N-CAM or L1 isoform in said neuronal cell, and (ii) decreases neuronal cell death associated with said [[a]] neuropathy.

113. (Currently amended) A method for decreasing neuronal cell death associated with a chemical or physical injury, wherein said chemical or physical injury is characterized by altered N-CAM or L1 isoform expression, comprising:

(a) contacting a neuronal cell damaged by a physical injury or exposure to a toxin that inhibits the proliferation and migration of neurons and interferes with cell adhesion, which exposure causes chemical injury; or

(b) prophylactically contacting a neuronal cell just prior to, or concomitant with, surgery that causes physical injury to the neuron;

with a morphogen comprising a dimeric protein with:

(1) a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5;

(2) a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5;

(3) a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5; or

(4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6; and

wherein the chemical injury is caused by lead, ethanol, ammonia, organic solvents, formaldehyde, cigarette smoke, opiates, or glutamate, and wherein the morphogen (i) stimulates the production of said [[an]] N-CAM or L1 isoform in said neuronal cell, and (ii) decreases neuronal cell death associated with said [[the]] chemical or physical injury.

114. (New) The method of any of claims 112 and 113, wherein the morphogen is human OP-1.

115. (New) The method of any of claims 112 and 113, wherein the morphogen is mouse OP-1.

116. (New) The method of any of claims 112 and 113, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, BMP2A, BMP2B, Vg1, Vgr-1, BMP5, or BMP6.

117. (New) The method of any of claims 112 and 113, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, BMP5, or BMP6.

118. (New) The method of any of claims 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5.

119. (New) The method of any of claims 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5.

120. (New) The method of any of claims 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5.